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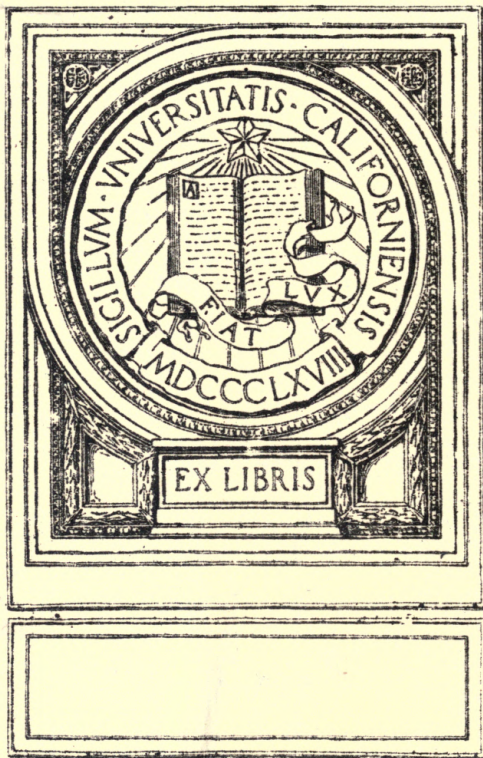
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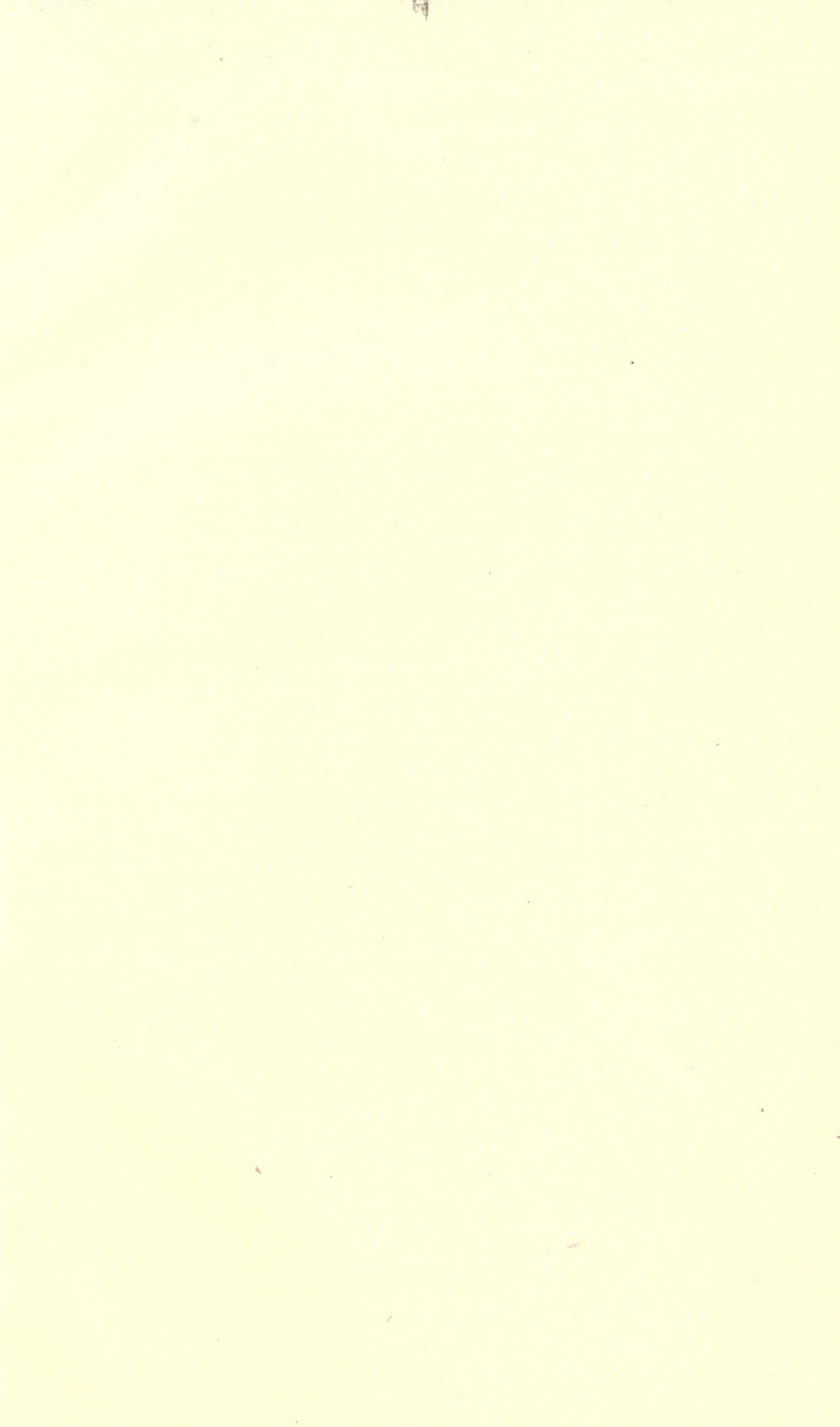


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GIFT OF







A MEMORIAL to the General Assembly, from the Committee appointed for that purpose, by the Internal Improvement Convention, held at Springfield, Missouri, in October, 1846.

To the Honorable the General Assembly of the State of Missouri:

The undersigned committee, appointed by the convention held at Springfield, on the 22d of October last, to make a statistical report on the subject of internal improvements, and to forward the same to the members of the Legislature from the southwest, beg leave to state that they have not yet been able to collect such desired information as fully as they deem contemplated by the resolution—owing to other necessary engagements and uncontrollable causes. They, however, cannot willingly disregard the expressed wish of so large and respectable a convention, assembled as it was with the patriotic view of giving an impetus to great and important interests of the State; expressing, too, on the subject of internal improvements, the lively and almost undivided sentiments of the people of the southwestern portion of the State; and we therefore, most respectfully submit the following facts and suggestions, for the consideration of the honorable members designated in the resolutions of our appointment.

The undersigned most heartily concur in the sentiments set forth in the very able and patriotic preamble and resolutions adopted by that convention; and, in their opinion, no reflecting man will deny, that the State is in duty bound to provide for the general welfare, to promote the interests and well being of all its parts; uninfluenced by sectional feeling.

To facilitate trade between different places, to render the conveyance of products and merchandize less expensive and more certain, so as to give to the producer and trader the choice of different markets, enabling them to bring in return the conveniences, the necessities, and even the luxuries of life, from other countries, thereby promoting the wealth and happiness of the community, is an obligation based in the social compact, which public authority cannot willfully disregard, without treading in the dust the first foundations of political organization. So, at least, thought the founders of our constitution; when they engrafted in that instrument, the clause declaring that internal improvements should forever be encouraged in this State—a clause then deemed a star in our organic laws, foreboding much good to the future; and we hope its light is not less cheering now, than it was a quarter of a century ago, for surely the State is not receding from its first steps towards political perfection.

Notwithstanding it was an object of the Springfield convention to endeavor to awaken a spirit of enquiry, and an interest on the subject of internal improvements throughout the State, yet, as the convention assembled from its southwestern portion, this committee presume they will not be considered sectional in their remarks, by confining them principally to the objects of improvement within this region.

In compliance with that portion of the constitution which enjoins upon the General Assembly, to make provision by law, for ascertaining the most proper objects of improvement, several important surveys have been made; and, that the Osage river is the first and most proper object of improvement, within the express meaning of the constitution, we presume there is no diversity of opinion.

In the year 1840, a scientific survey of this river was made, from its mouth to the town of Osceola, under the direction of the then existing board of internal improvement, with a view to its being made navigable. Perhaps no river is more susceptible of easy improvement, or will afford greater advantages, when improved, than this stream. It consists of a succession of pools, averaging, as far as surveyed, 23-7 miles in length, and from 5 to 20 feet in depth at low water—resembling a chain of beautiful lakes of unobstructed navigation, as far as relates to them—and, these pools are separated by gravelly shoals, which constitute the principle obstruction to steamboat navigation, as snags are by no means numerous, owing to the great stability of the banks, and the very little sand in which to embed themselves. The extent of the river, following its meanderings, so far as surveyed, is 229 miles, the number of shoals in this distance being only 98, and the average fall in the river barely $8\frac{1}{2}$ inches per mile, while the maximum range of the river, from high to low water, is about 27 feet; thus showing its extreme gentleness and susceptibility of easy improvement.

Mr. Morell, the engineer, who surveyed the river, presented in his report his plan for improving it, which, he thinks, would make it navigable for a considerable portion of the year—estimating the cost of improvement, as far as surveyed, to about \$200,000. The unsurveyed portion of the river, from the town of Osceola to the State line, is also, doubtless, susceptible of being made navigable for steamboats, as they have already ascended as high up as the Old Harmony Mission, in Bates county. The district of country above the junction of Sac river, is of a very level character; and though the volume of water in the main Osage becomes much less, the stream becomes narrower, while the banks retain their usual height, and it still remains sufficiently wide for navigable purposes.

The extent of territory which would be directly benefitted by the improvement of this river, comprises about one-fourth of the State; and the engineer, in his report, estimates the pecuniary advantages, in a commercial view alone, arising from the lessened expense of shipping produce from the country and merchandize in return, which would accrue to the people thus directly interested, by means of this navigation, at \$229,563 annually. This calculation was made in 1840, and taking it as a correct standard, and considering at the same time the increase in population, in agricultural products, and the consumption of imported merchandize, we are induced to believe that those advantages would now be at least a half million annually, while the costs of constructing the works would be considerably less, on account of the accumulation of labor and depreciation in its price since that time.

To accomplish that by the joint efforts and combined strength of the whole, which individuals cannot singly perform, stands conspicuous among the primary objects for constituting government.—The improvement of this river should not be left to individual enterprize alone. Policy demands that it should be performed by the strong arm of the State. Nature has opened this noble channel into a region where she has planted her resources, various and unbounded. Individual enterprize will develop the latter, whenever the State shall overcome the obstructions of the former; and it is by such works as these, that a State accomplishes the high purposes of her destination—instils a universal love of country, because individual perfection is thereby enhanced, and erects the monuments of her own durability and glory.

But the pecuniary profits, as above stated, are but few of the advantages which would accrue from the desired works of improvement. They would cause a development of our natural resources; and stores of native wealth have been scattered throughout this region, by the hand of Providence, with much profusion. The soil, whether of prairie or timber, upland or bottoms, is generally fertile. The streams, whether tributaries of the Osage, South Grand, or of White river, all afford excellent water-power, offering great manufacturing advantages, while in the immediate neighborhood of many of these natural sites, iron ore of fine quality abound in abundance. Localities of lead, too, are extensive; coal, in many parts, is inexhaustible, and specimens of copper ore have been obtained from several localities, ranging from the north side of the Osage to the borders of White river, and it is not improbable that these localities may be developed, and, at some future time, become as celebrated as the mines of Cornwall.

Strong inducements, too, are held out to the agriculturist; though our winters are mild, the various grasses flourish as finely as in higher and more northern latitudes, and no country is better adapted to the growth of the various grains, as well as of hemp and tobacco.

We have thus hastily glanced at some of the natural resources of this region, because we are aware that the necessity and value of internal improvements are much dependant upon them. Yet, with all these natural blessings, the people are not sufficiently prosperous. No people ever did or ever can prosper, who have not the facilities of trade—of exchanging their commodities with other people and other countries. The expense and trouble of transporting the surplus produce to market, chills the nerves of industry, and men of enterprize and capital are averse to locating in a country deprived of navigation or other means of circulating trade.

Let the State, then, awaken to these considerations, and give us these facilities, and a great change will be felt in southwest Missouri. No matter in what point of view this subject is examined, the State must receive great advantages from making these works of improvement. They will prove a source of revenue. The wealth and strength of the State is ever concurrent with and dependent upon the wealth and prosperity of her citizens. Experience proves, that lands lying in the vicinity of navigable streams, though of no better quality than those in the interior, are still of four-fold value. By these improvements, then, the value of property would be enhanced, population increased, vast tracts of Government lands be sold and become subject to taxation, capital would flow into the country, all the various interests of the community, the agricultural, manufacturing and commercial, be brought into active operation; universal opulence would follow, as a natural consequence, and the treasury be supplied by these new sources of revenue.

If the State, then, by now making the small appropriation of \$200,000, would, in a very short time, receive, as a consequence thereof, the same or perhaps a greater amount into the treasury annually, would she not act the part of wisdom by so doing? These are works which, if accomplished at all, must be accomplished by the State; for, we presume, Missouri, cherishing as she does such lively feelings of State pride, and so strong an adherence to a strict construction of the federal constitution, will not ask of the Federal Government a direct appropriation for these interior purposes.

This committee apprehend that if the State should fail to engage in

these works, the failure will be occasioned by prudential motives and a dislike to involve the State in debt. Missouri, in this respect, may be considered the mother of prudence, having existed as a State for more than a quarter of a century, without laying her hand, in a single instance, to any work of the kind! Unkind insinuations that she desires to see her vast territory, with all its natural advantages and inexhaustable resources, remain forever in a state of nature, should be indignantly repelled, for they are the sentiments of the wild Indian, and belong exclusively to their mother barbarism, and not to the enlightened and patriotic citizens of Missouri!

These prudential motives have not remained unperceived, and the General Government has granted her a half a million acres of land to be applied to internal improvements, and for which application the faith of the State is now plighted. But, instead of its being applied by the delegated wisdom of the State, the fund has been given for appropriation to the keen discernment of the various county courts! Such, on application, approximates so nearly to individual enterprise, that it is seriously apprehended that no great good will ever be produced by it.

The improvements of the State must necessarily be progressive, and it is confidently believed that the proceeds of the Congressional grant will be amply sufficient for a considerable length of time to come.

We are aware that many persons, in some portions of the State, are disposed to ask of Congress a change of this grant, so that it may be applied to the purposes of education. We have already a large educational fund; and, besides, the rearing of children is a domestic duty, which the human sympathies never neglect, whenever proper means are afforded. Then give to the State the proper means of general prosperity, and well educated children will be the natural consequence of such prosperity. While we give to our children good education, let us also give to them a country which will prove a fit theatre for the action of their expanded minds.

When we consider the subject of internal improvements, in a national point of view, it loses none of its importance. The several States constitute the nation, and the national strength and perfection depends upon the possession of these qualities by the States. The national treasury, too, is mainly supplied by commercial operations. To facilitate trade, both internal and foreign, should be the peculiar object of this great republic, for no prosperous nation neglects it. Commerce enriched ancient Carthage, and counterbalanced Roman fortune, courage, and greatness. Nor has it been less propitious to modern Europe. It has decorated the marshes of Holland with the riches of India, and it constitutes the crown of England's glory! Our foreign trade should be principally supplied by the products of the interior, and they, in future time, will be sufficient to supply the deficiencies of half the globe, if ready facilities of transporting them to the seaboard shall be afforded.

It is an interesting spectacle to behold the magnificence of extent of this republic. It comprehends within its limits the temperate zone! Tropical fruits enrich the gardens of our southern, while the snows are deep on our northern boundary! The Atlantic billows announce to our citizens the rising sun, and the waves of the Pacific cheer our citizens with his effulgence at evening! Such is the extent of our country, with all its consequent diversity of interests and pursuits, throughout its im-

mense interior! Without the facilities of intercommunication, this great extent, perhaps, might be thought a national weakness; for nothing is so much calculated to estrange the feelings and sympathies of a people as distance and non-intercourse. But the surest cement of the Union is a general and ready intercourse throughout all its parts. To conquer space, to annihilate distance, is the great consideration of the American people. Give a ready and rapid circulation of interests and sentiments, enlarge and accelerate social intercourse, and you thereby constitute the firmest bonds of perpetual union. Channels of communication throughout the interior, are as necessary to the healthful action of the great body politic, as the veins and arteries are to the action of the heart. Nature has been exceedingly bountiful in intersecting the country with so many rivers, and belting it with larger waters. But much remains to be done by the States. Nor have our sister States been unmindful of this great duty, the timely performance of which they owe to themselves, to the public at large, and to posterity. Missouri enjoys largely the benefits of internal improvements constructed by other States, and will she refuse to afford benefits in return, of a similar character, especially when the General Government has placed in her possession the means of so doing?

When we duly consider that our government, whether State or national, is exclusively a government of the people—that the monuments of national strength and glory must arise from their hands, and wherever they are erected, the most distant portions look to them with equal interest and pride—when we recollect that our fathers, while they were securing, through blood and slaughter, the *alma libertas* which is our felicity now to enjoy, were enduring hardships not so much for themselves as for posterity, we should not be unmindful of the duty which is due from us to our common country and to posterity, of the obligations we are under to assist in giving that gradual perfection to our institutions so necessary to their perpetual existence.

Missouri, with a territory more extensive than any other State, and more highly blessed with the stores of nature's wealth, may perhaps continue to neglect them, while the States around her, sensible of their self-interest, and with energies strengthened by the fires of patriotism, are "onward and upward" in their march. But let Missouri stand *not solitary and alone, in masterly inactivity*, and to the patriotic exertions of the honorable members from the south-western portion of the State an extensive community look with enlivened anxiety and confidence.

F. P. WRIGHT,
JAMES M. MAJOR,
JAMES WINSTON.

REPORT

OF THE COMMITTEE ON INTERNAL IMPROVEMENTS,

In favor of a Geological Survey of the State.

HOUSE OF REPRESENTATIVES, }
January 22, 1847. }

The Committee on Internal Improvements, to whom was referred so much of the Governor's Message as relates to a geological survey of the State, have maturely considered the subject committed to their charge, and beg leave to report, that they are deeply impressed with the importance and necessity of the measures sought for, and recommend a geological survey of the State.

Your committee were not averse to combining a zoological and botanical, with a geological survey; but were deterred from the recommendation by a consideration of the expense and remote attendant advantages; but would suggest that it be kept in view, and appropriation made as soon as the finances of the State will warrant such an outlay.

The object of geology is the investigation of the structure of the earth; of the mineral and organic substances of which it is composed, and of their relations to one another; of the changes which have occurred in its physical condition during the revolutions of time, and the influence they have exercised in bringing about the present order of things, together with the laws which have governed the world during its different epochs, while it furnishes the best guide for discovering the various mineral ingredients, which occur in the earth.

Connected so intimately with the great interests of mankind, it has not failed to attract the most earnest attention in every portion of the civilized world; and it has been justly remarked, that a correct scale of the intelligence and prosperity of nations could be formed by discerning the relative degrees in which they have cultivated this science.

The importance and value attached to geology in Europe, are fully supported by the measures which the governments of England, France, and Russia, have instituted to secure minute and accurate geological surveys. England has just completed the "ordinance geological survey," under the able directions of H. T. De la Bach. It embraces a very detailed account of the geology of the country, and is accompanied with numerous colored maps and sections; and this is of a region where there had been previous surveys and examinations, by all their distinguished geologists, for more than a half a century. Still, the government, in consideration of the importance of the subject, had this most thorough and complete survey made.

France, too, has been engaged for nearly twenty years, in executing a geological survey and map of their whole kingdom. The work has been completed by M. M. Elie-de-Beunmont and M. M. Dufrenoy. Even Russia has had an examination of her rocks and minerals by Messrs. Murchison and Verneuil. At the close of their observations

they were both knighted by the *Czar*, in acknowledgment of the services they had rendered the country and the value set on their labors.

It is gratifying, therefore, to perceive that the American people have not been found behind the age, as our own government has had David Dale Owen employed as United States geologist, and a survey has been made of the territories of Iowa and Wisconsin, a valuable, minute and complete report has been the result. Twenty-two of the States in the Union have engaged in the work; in ten of them the work is already finished; many of our western sister States, have ordered surveys, of which valuable reports have been made; that of Ohio, by Charles Whittlesey and associates; of Indian, by D. D. Owen. A reconnoissance report has been made of Kentucky, and it is expected a detailed survey will be ordered this winter. A survey has been ordered in Arkansas, and preparatory steps were taken at the last session of the legislature of Illinois, for a similar purpose in that State.

But researches and investigations elsewhere, will not avail us in illustrating our resources, providing they were to be discovered in similar formations; much less, when the rocks differ so widely in their character and mineral contents.

Nor should these interests be any longer left to individuals in their private capacities, and at their own expense. True, they have accomplished much, and may yet do more in this way; and to those enterprising citizens of the mineral regions, whose labors exerted under such unfavorable auspices, have nevertheless succeeded so well, are entitled to the highest praise, as disinterested promoters of the public welfare. But it should not be left to individual exertion, as much would be lost for the want of exact knowledge in this department of science; and in particular, much would be expended in speculations in a business, the principles of which are but little known, and but imperfectly established among our citizens. The expression of these views are unimportant to the enlightened body before whom they are to be laid; yet they may assist in sustaining a policy which may not be so well understood by those whose means of information are for any cause deficient.

The objects of geological surveys are to arrive at a correct knowledge in detail of the earth's structure; its hidden contents; their condition, and their relation to the uses of man. Some of the most obvious benefits to be derived from them are, to gain a knowledge of the existence or absence of useful and valuable ores and minerals, as well as a great variety of other materials found either in the soil, under the soil, or in the bowels of the earth, which may be important in an economical point of view. For instance, coal, ores of iron, zinc, lead, tin, copper, antimony, arsenic, bismuth, cobalt, nickel, silver, gold, and other metals, useful in the arts; limestone, suitable for marble, lithographic uses, ornamental purposes, or for burning into lime; roofing slates; clays for pottery, porcelain, earthen ware, stone ware, and modelling, or for making common bricks, fire bricks; sands for glass; rock salt, or brines; copperas, allum, soda, saltpetre, epsom or glauber salts; hydraulic cement; durable materials for construction, whether they are freestone, limestone, granite, lignite, porphyry, or serpentine; gypsum; fluxes for the reduction of metallic ores; marls or other mineral manures proper for the improvement of the soil.

The discovery of these, however, is but a small part of the information to be gained by geological researches, for many valuable minerals or materials may be almost worthless, either from being accessible only at a great cost or from injurious admixture of other substances, or from lying in beds or veins too inconsiderable to warrant the expense of working them, or because they run into the earth in such manner that the excavation would become too expensive to keep the mine in working condition. It would be the duty of the geologist to investigate, in an especial manner, all these points, as well as others which may have an important bearing on the commercial value of such discoveries. Suppose, for example, the geologist had discovered a bed of coal, he would ascertain its thickness, what inclination or dip it has, that is, whether it pitches into the hill or towards the valley; by which alone, the practicability of draining the mine can be determined, and what underlays and overlays it; for, on the hardness and stability of the *roof*, as a coal mine, depends the necessity of propping, which involves great expense. He would ascertain the quality of the coal, which in many instances may require an accurate chemical analysis, since foreign minerals disseminated through coal, may render it almost worthless. He would make observations with the proper instruments at various points, to determine at what depth any given seam of coal may be found, either in the body of a hill or beneath the general level of the country, after disappearing from the surface. Observations would determine the range, extent, and bearing of the seams of coal, which would determine the precise area, and extent of the coal-field.

The extent or practicability of working each bed or vein of iron, copper, lead, or other metallic ore, would be determined in the same manner as the coal; and the nature of the vein, stone, wall rock, and appearance of earth surrounding the ore, the admixture or dissemination of rock through the ore, the practicability of draining or freeing the works from water, besides a thousand minor investigations which will determine its profitableness or value.

The same examinations would be made of the extent, area, quality, and quantity of the strata of rocks, clays, sands, or earth, that could be used for building purposes, or that might afford salt, soda, copperas, saltpetre, or lime cement; clays suitable for porcelain, earthen ware, stone ware; sand suitable for the manufacture of glass, &c. If a metallic ore should be found, which the geologist had reasons to believe had been derived from some neighboring vein, he would endeavor to trace the specimen to its natural vein; having discovered this, he would determine the course of the vein; then, by "*prospecting*," ascertain its extent as well as its thickness.

The most important and valuable of all minerals, to an industrious and cultivated people, is, perhaps, coal; and will ultimately be found so to the people of this State, on account of the scarcity of timber. One of the objects of a geological survey, would be to determine the precise area and extent of the coal field in our State, (which we believe will be found to extend over at least one half of the State, and connected in the northeast with the great Illinois coal field,) so the people might know in what area this combustible is likely to be found, and at what depth, and where it would be useless to search for it. Immense sums of money, more than enough for a detailed survey, are ex-

pended in almost every State in the Union in search of coal, in districts of country where it is impossible to find it. An experienced geologist, as soon as he gets a view of the surface rock, can at once pronounce, with the utmost certainty, as to the possibility and impossibility of finding coal. There is no formation which is of more importance, which should be more accurately surveyed. Some of the coal deposits in this State are represented to have a workable thickness of forty feet, being nearly twice the thickness of any in Europe, and, in extent, many times greater than their "great coal field," as they term it.

There have been calculations made of general accuracy, of which there is no doubt, when we consider the minute geological surveys of that country, showing the time it will take to exhaust the coal in England. When this time comes, what is to become of her Manchesters, Birminghams and Sheffields? The "workshops of the world" will be found in the coal-fields of the United States. Among the causes which will facilitate the westward course of empire, and cause it to seek its permanent abode on the banks of the Mississippi, Missouri and Osage, none are more important than the mineral wealth of the region drained by those mighty rivers. A bushel of coal, economically applied to the most efficient form of steam engine, will do the work of sixteen horses or eighty-eight men. Who can calculate the industrial facilities of the coal region of Missouri?—a region exceeding in size many of the kingdoms of Europe. The coal basin in the vicinity of St. Louis is capable of producing, annually, an amount of coal that, properly applied, would equal the labor of fifty millions of men. The coal mines of Missouri have the capacity of yielding, for thousands of years, an annual quantity of coal which may be made to do more work than the inhabitants of the whole world.

In a geological survey of our State, the mineral regions, and particularly the valuable ores of iron, copper and lead, would be minutely examined; the indications as to their presence would receive a full investigation, in order that a system of rules might be formed, by which the miner could judge of the presence or absence of any given mineral; the extent of the mineral region, and where it would be probably of use to make examinations for ores of lead, iron, copper, cobalt, nickel, &c.

Besides these economical considerations, there are others, which relate to science in general, and which would be promoted by exact and particular observation, on the accumulation of mineral matter. Every fact would be brought out which bears even remotely on the subject.—By ordering such a survey, only may we hope to advance the science of geology in our State, and place it on a foundation that will make it useful to the miner, the mechanic, and the agriculturist.

A geological survey would be of particular benefit, to the miner as the geologist, in that part of the report relating to metallurgy—would give the art of reducing metals from their ores, and working them into different forms; also their quality and value; whether they would smelt easily, and the per centage they would yield in the furnace, and the quality of the metal, and the most economical mode of smelting them, with suggestions and plans for building furnaces and other necessary machinery, as well as how near it may be situated to coal or timber, water power, the proper fluxes, and building materials, &c. For, with

the proper information, iron, copper, zinc, nickel, and cobalt could be manufactured to any extent.

Iron.—So plentiful is this mineral, that Missouri has been styled the “Iron State,” and there is probably no portion of the world that can vie with us either in quantity or quality of this most valuable of all metallic ores. It is to this metal we owe our superiority over uncivilized man. Its magnetic properties guided the skilful mariner across the ocean, and enabled European civilization to extend itself to this country. Such is its abundance, that in many places it is only to be quarried as the common rocks of the country, and all the varieties of ore found either suitable for malleable iron, steel, or castings. With all these advantages, there is not within this State more than two furnaces for smelting iron, and one of these has been erected but recently, while the States of Pennsylvania, New York, and Tennessee, are deriving an immense income from their iron works, possessing but a moiety of our advantages; but they have all had geological surveys, and their limited resources, compared with ours, made known.

It is only within a few years that the *Iron Mountain* has been heard of—that unrivalled deposit of iron—and the accounts of it even now are so vague, that there can be no great reliance placed on them; and of many other immense deposits there is still less information.

Copper.—This valuable metal stands next to iron in its economical value, and is indispensable in the arts. Our copper ores, by scientific investigation, no doubt, will be found to be as rich and valuable as the famed Lake Superior ores, the richest in the world, and which have attracted so much attention within the last few years. The lamented Dr. Houghton first called attention to them by his geological survey of that region, ordered by the State of Michigan. We believe they are not worked, (with but a single exception in the State, and that not very successfully,) for the want of information as to the most proper mode of smelting—kind of furnaces, fluxes, &c.—which can only be determined by a most accurate analysis of the various ores, which no private individuals feel warranted in making.

Some little impure copper has been made at several places in the State from the carbonate. One of the most easily wrought of the ores, a gentleman of science, Dr. J. O. Mullowny, who has had some experience in the matter, says, that all that has been done so far, has been done at great loss.

Zinc.—This useful metal has never been smelted within the State, though the ore is found in abundance. It is daily becoming more important in the arts, and has been steadily increasing in price for some years. For the want of proper information for smelting it, our State is deprived of a large revenue, as sale could be found for any quantity of the metal.

Lead.—This is the only ore that is worked to any extent within the State; it is easily reduced, and but little skill is required in obtaining the metal. But the profits of a furnace depend on the workmen able to obtain the largest possible quantity from the ore. There are now about thirty furnaces in the State. The amount of lead smelted must be from thirty to thirty-five millions of pounds, and worth more than a million of dollars, being as much as all the hemp and tobacco raised in the State. But who can say that the business is conducted in the best man-

ner? They are now collecting and smelting over the cinders they threw away but a few years since, and collecting the ore they passed over as worthless. In Europe they find it a profitable business to extract the silver that is found in the lead. It is only a few years since they had much difficulty and great loss in smelting the lead at one of the principal mines in the State, on account of some foreign mineral being found in it, which would have been remedied in a few hours by the geologist.

A gentleman, eminent for his scientific acquirements, Dr. H. King, who resides in the mineral region, says there is a larger amount lost every year by the smelters than would pay for a geological survey, in not knowing the proper fluxes to smelt some of the lead ores that have other metals associated with them.

Cobalt and Nickel—Two very valuable metals in the arts, are found in abundance; and, of the former, the deposit is the most valuable of any known in the world; but no attempt, with a single exception, have ever been made to work them.

This sketch of valuable ores could be extended to a greater length, even with the knowledge that is possessed, but these will suffice to show that the mineral resources of Missouri, if properly developed, must form an important element of her future greatness.

During a geological survey, the origin and consequence of *earthquakes*, in the southeastern part of the State, would be studied; the probability of danger by commotions taking place; the practicability and best manner of draining the swamps and ponds in that region and elsewhere; the proper place to *levee*, so that the water would be prevented from seeping through under them, and thereby rendering them useless; besides, valuable information would be obtained, which would serve as a guide in estimating the cost and proper location of internal improvements; as the most practicable routes for railroads and other internal improvements have been pointed out by the geologists of the States through which they have passed, which is easily accounted for from the intimate connection of the the form of the surface with the geological arrangement. An exact knowledge of the latter would furnish the truest guide in all topographical investigations for such purposes.

The measurement of hills and strata necessarily taken, would show the relative highths of summit levels, and the amount of earth and rock excavations required in cutting through hills, as well as the fillings and embankments necessary in carrying a road across valleys. The accessibility of the proper material for *metaling* roads, would also become known, which will be of the greatest importance in the constructing of turnpikes, as materials are frequently put on that disappear in the shape of mud and dust, in a few years. Most of the expense of keeping McAdamized roads in repair, is occasioned by the quality of the materials of which they are constructed.

A want of knowledge with regard to the durability of materials of construction, has been a source of vast pecuniary loss, especially in public works in the west; many costly structures are fast crumbling before the atmospheric vicissitudes, in consequence of employing a building rock of a perishable character, that will scale, or crumble to sand or powder in a few years; while others might be contaminated by the presence of pyrites and protoxyd of iron, both of which not only

produce unsightly stains, but greatly injure the quality. The rocks that would crumble by the action of frost, might answer for permanent architecture in a milder climate, and thus be a source of wealth to our State.

An experienced geologist would determine these points. Could we enumerate the aggregate sum lost yearly to the citizens of the State, by the employment of unsound materials in private structures, we have no hesitation in saying it would amount to double the necessary appropriation for a thorough geological survey.

A chemical analysis of the limestones, and how they would act in the fire, their power of slacking, strength of the mortar, whether suitable for cement for the construction of cisterns, dams, water-proof cellars, &c., or for agricultural purposes, and all other practical operations for which they are required, and the precise quantity of the lime necessary, will be carefully exhibited. It is frequently the case that an inferior article is used, when a better could have been easily obtained.

The geologist would also make an analysis of the various waters.—The settlers of the country feel great interest in being assured of the salubrity of the water of their wells and springs. It would be his duty also to inquire how sections of country, apparently without water, might, by artificial means, be supplied with an abundance of an article so indispensable to man and beast.

By a survey, the resources of the State would be illustrated; and by spreading information abroad respecting their nature, emigration would be induced, and our citizens kept at home, through the profitable investments which would be pointed out for their capital. The value of individual property, the aggregate of which forms the sum of the State wealth, would be greatly increased; new resources would be discovered, and the extent and value of those now but little known, would be ascertained and reported; mines and minerals would be brought to light and wrought, and fabrics that are now imported at high cost would be easily produced at a cheaper rate at home, which would have the double effect of retaining capital and promoting domestic industry. The immediate results of which would be the increase of the common wealth of the State, and the alleviations of the public burdens by taxation or otherwise. The saving of time, labor and expense in vain researches after lead and other metals, and for coal and salt in districts where such substances never occur, would annually amount to more than the cost of a geological survey;* besides, it would check deceptions in mineral substances, as the whole community would possess the same sources of information, so that one man could not practice to any extent upon the ignorance and credulity of others.

The cabinet of minerals which would be collected for the State, would become one of the most interesting objects to citizens and stran-

* Some years ago, twenty thousand pounds were expended in England in a useless search for coal in Hastings sand. Although there were some apparent indications, a geologist could at once have predicted failure. "All are familiar," says James Hall, "with the mining enterprises, now less frequent, in search of coal along the valley of the Hudson, in which there have been expended more than a half a million of dollars within the last fifty years."—And Murchison, in his treatises on the geology of Wales, remarks, that more wealth has been expended in the useless search for coal in that part of the country, than all the geological investigations of the whole world have cost.

gers visiting the capitol, and present at once the means of judging respecting the relative value of any important mineral in the State, and might come to the means of settling questions concerning acts of incorporation for working mines, and thereby prevent much fraud, as the committee might be at once referred to specimens in the cabinet by which they would perceive whether there were well founded reasons for granting the charter.

Of all the arts, none are more likely to be improved by geological examination, than that of agriculture, since the composition of soils indicates their fertility, or capability of improvement, and the causes of barrenness. The science of Geology demonstrates the origin and distribution of the mineral matters constituting the basis of all soils, to which they chiefly owe their peculiarities.

The amendments required would be determined by the geologist, who would make known whether the required materials occur in the vicinity where they are wanted; for it would be of no use to the farmer to inform him that the substance required occurred a hundred miles off; because the large quantity of matter demanded would forbid the expense of distant transportation. Every enlightened farmer appreciates now the value of the knowledge to be obtained by a correct analysis of his soil, both with regard to its peculiar fitness for the production of certain crops, and the manures proper to be applied in cases where some one or more of its constituents have been measurably or wholly exhausted.

It no longer suffice, however, to make an approximate analysis of the earthy and organic matters and salts.

An analysis, to be useful, or, in other words, to enable the agriculturist to form a correct opinion of the crop suitable for any of his different soils, and to suggest the proper organic or inorganic manures for his land, must be carried to the utmost nicety, so as to determine, even to the fraction of a grain, the quantity of acids, alkalis, and metallic oxyds which enter into its composition. This is not to be accomplished in an hour or a day, by the rough estimates formerly resorted to; it requires weeks of the most rigid manipulation, and the application of the most improved process in chemistry. Such investigations ought to be among the leading features of a geological survey.

A thorough inquiry into all of the before mentioned topics—and the actual state of the country, with its available resources, are only to be developed by such researches—idle and fraudulent speculations originating from self-delusions and impostures, would be thoroughly checked, and erroneous opinions concerning minerals would be corrected, and vast sums of time and money would be saved to the people every year. A handful of iron ore would no longer be liable to be taken for an inexhaustable and valuable mine, but those ores which are really valuable would be fully explored and described, and the exact quantity that might be depended upon for the supply of the furnace be made known; the situation, extent and value of every available quarry be described, and the quality of the rock tested.

Your committee, influenced by the above considerations, have, with a perfect unanimity, worthy of the subject and importance of the object to be accomplished, instructed me to report the accompanying bill and recommend its passage.

DEWITT C. BALLOU, of Benton,
Chairman.

REPORTS OF STANDING COMMITTEES.

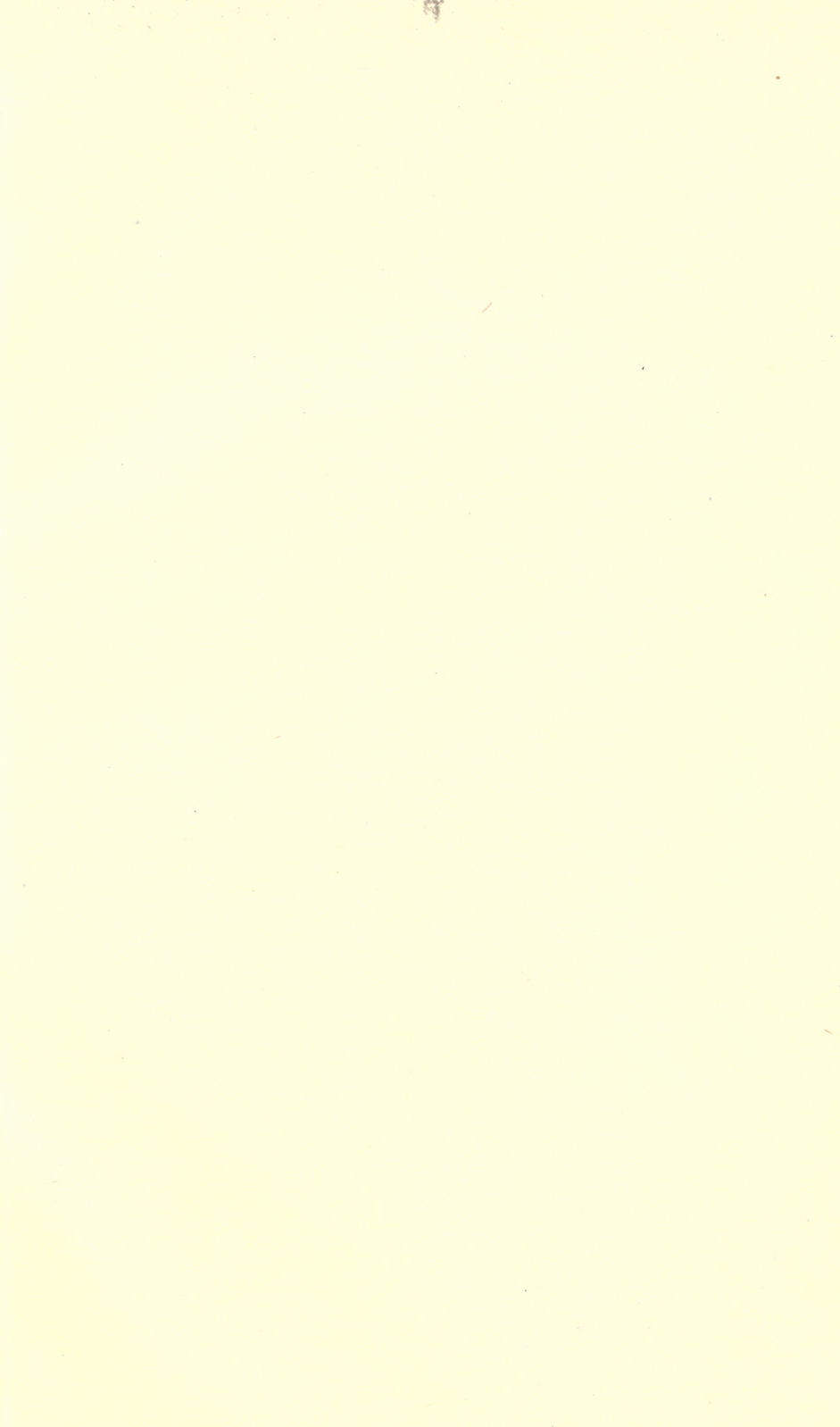
COMMITTEE ON FEDERAL RELATIONS,

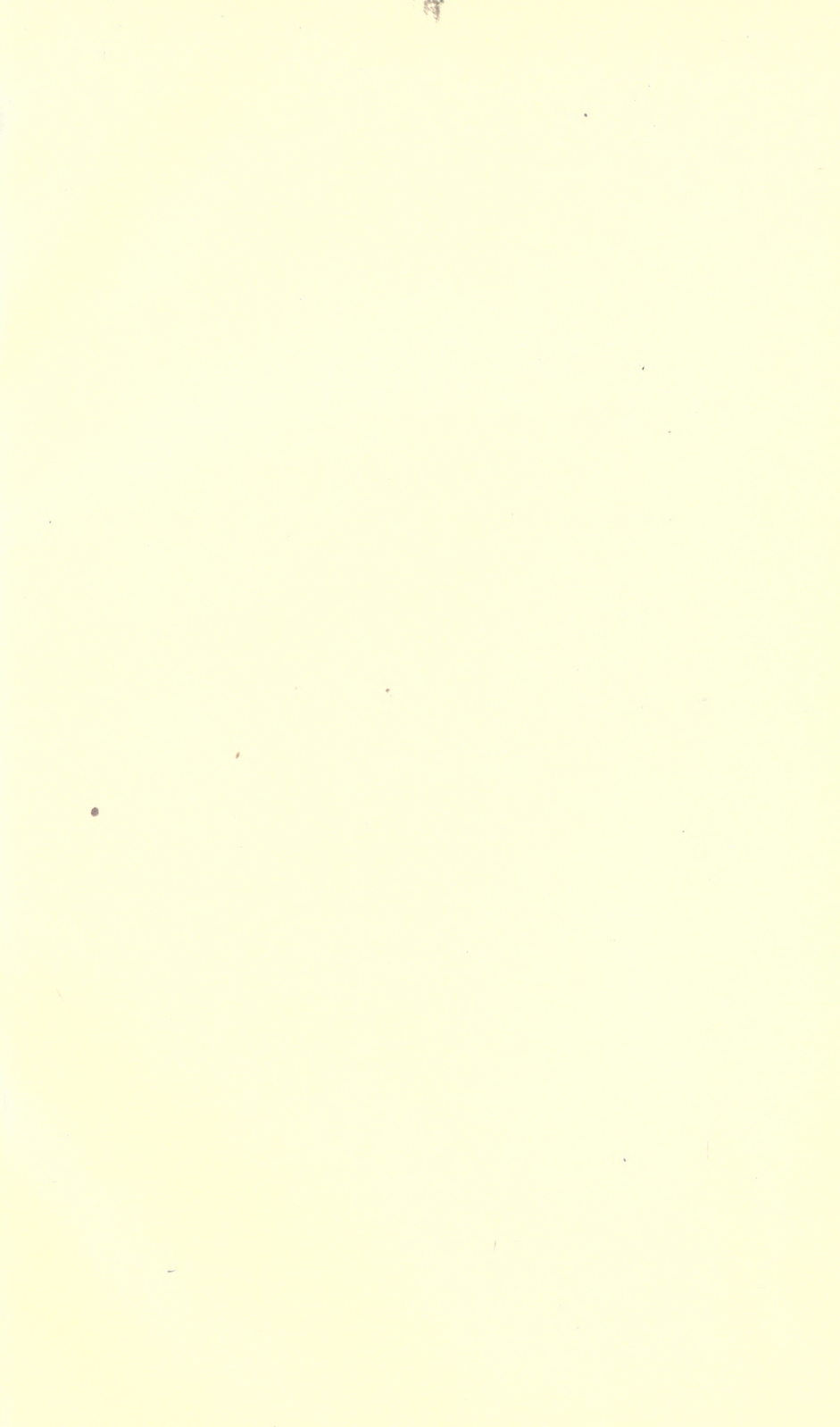
MR. SPEAKER:

The Committee on Federal Relations, to whom was referred the message of the Governor, in relation to the imprisonment of Jonathan Riggs, late of Schuyler county, by the authorities of Iowa Territory, have instructed me to make the following

REPORT:

That after the organization of the county of Schuyler, by the last General Assembly of the State of Missouri, it was found difficult to induce any one to accept the office of sheriff of said county, in consequence of the dispute existing between this State and Iowa Territory, as to which was entitled to jurisdiction over a portion of territory embraced within the limits of said county. Frequent disturbances occurred between those living in the disputed territory. Iowa resolutely maintained her right to the territory in dispute, and no citizen of this State could attempt to enforce the laws over the same, without subjecting himself to all the evil consequences of a collision with the government of Iowa. It required no ordinary degree of firmness and moral courage to attempt this dangerous office. Jonathan Riggs, under these circumstances, was recommended to the Executive of this State as a man well qualified for the emergency; and, at the solicitation of friends, was appointed sheriff of said county. Riggs entered upon the discharge of the duties of his office, soon after his appointment. In the month of May succeeding while in the discharge of the duties of his office, and while asserting, and enforcing the sovereignty of Missouri over the territory in dispute, and executing her laws in the same, as a true and faithful citizen, was arrested by those acting under the laws of Iowa—taken to the jail in Van Buren county in said territory, and there incarcerated in the same dungeon with a felon, under sentence of death. Riggs' offence consisted in asserting and maintaining the sovereignty of Missouri, over the territory in dispute, and faithfully discharging his duties as a citizen and officer; and for this offence, he was snatched from his family, deprived of his liberty, and subjected to all the privations and hardships of a common felon. To add to the peculiar hardship of his case, he is, as your committee are informed, a poor man, with a large family dependant on his own labor for support. At the busy season of the year, when the farmers are planting their corn, and sowing for the harvest, he is suddenly snatched from the bosom of his family, are left in suffering and want, and the mutual anguish consequent upon such a state of facts, is added to his bodily sufferings. All this he bore with patience and fortitude byoyed by the hope and belief that, at the hands of coun-





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